

## Claims

1. A method of forming a fine pattern, comprising the steps of:  
forming a silicon-oxide-based film on a substrate directly or  
5 by way of another layer;

forming a chemically-amplified photoresist layer on the  
silicon-oxide-based film; and

transferring a mask pattern onto the chemically-amplified  
photoresist layer upon exposure through a mask; wherein, in the step  
10 of forming the silicon-oxide-based film, a nitrogen content of the  
surface of the silicon-oxide-based film is made to assume a value of  
0.1 atm.% or less.

2. The method of forming a fine pattern according to claim 1,  
15 wherein the silicon-oxide-based film is deposited at a temperature of  
400°C or more by means of the plasma CVD technique.

3. The method of forming a fine pattern according to claim 1,  
wherein a step of exposing the surface of the silicon oxide film to  
20 plasma atmosphere of O<sub>2</sub> or N<sub>2</sub>O is added between the step of depositing  
the silicon-oxide-based film and the step of forming the  
chemically-amplified photoresist layer.

4. A semiconductor device comprising:

25 a substrate; and

a silicon-oxide-based film which is formed directly on the  
substrate or on the substrate by way of another layer; in which nitrogen  
content of an upper boundary area of the silicon-oxide-based film  
assumes a value of 0.1 atm.% or less.

5. A method of manufacturing a semiconductor device, comprising

the steps of:

forming a silicon-oxide-based film on an underlying layer directly or by way of another intermediate layer, the surface of the silicon-oxide-based film having a nitrogen content of 0.1 atm.% or less;

5 forming a chemically-amplified photoresist layer on the silicon-oxide-based film;

transferring a mask pattern onto the chemically-amplified photoresist layer upon exposure through a mask; and

10 etching the underlying layer by way of the resist pattern, to thereby form a fine pattern in the underlying layer.

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